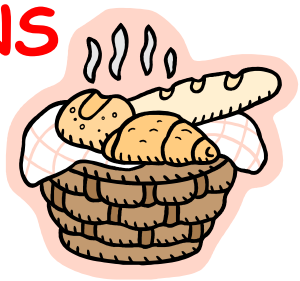
# BUILDING ON GRAINS



**THEME:** Power Up With Breakfast
**NUTRITIONAL FOCUS:** Bread, Cereal, Rice & Pasta Group
**GRADE LEVEL:** 6

**OBJECTIVES:**

1. Students will gain an understanding of the "Bread, Cereal, Rice & Pasta Group" of the *Food Guide Pyramid* by reading a selection, participating in class discussions, and completing activities.
2. Students will learn the importance of eating a smart breakfast by participating in class discussions, reading, and completing activities.
3. Students will learn to make smart choices in the diet by reading and comparing information from food labels.
4. Students will demonstrate writing skills by editing paragraphs.
5. Students will demonstrate problem-solving ability by using information to solve problems.
6. Students will demonstrate their understanding of mathematics by constructing a design and completing tasks based on fractional parts, perimeters, and area.
7. Students will choose to eat a healthy breakfast as a result of becoming aware of the recommendations of the *Dietary Guidelines for Americans* and the food groups of the *Food Guide Pyramid*.

**CURRICULUM CONNECTION:** Art, Health, Math, Reading, Science, Writing

**Fine Arts Standards:**
**Visual Arts —** Students will understand and use visual arts as means for creative self-expression and interpersonal communication.

**Health Education Standards**
**Standard One:** Students will understand health promotion and disease prevention concepts and practices.
**Indicator Two:** Students will analyze the impact of emotional, social, and physical health on various interrelated body parts.
**Standard Three:** Students will understand the benefits of practicing health-enhancing behaviors which reduce health risks.
**Indicator One:** Students will evaluate health-enhancing behaviors, which promote wellness.
**Indicator Two:** Students will evaluate strategies for achieving and maintaining personal health goals.
**Indicator Three:** Students will evaluate the role of personal responsibility in health-related decisions.

**Listening and Viewing Standards**
The student will:
3. summarize, respond to, and evaluate group activities.

**Measurement Standards**
The student will:
2. convert units of measure within a measurement system.
3. explore the formulas that assist in measurement situations.
7. use area formulas to solve problems.
8. apply units or combinations of units for various measurement situations.

**Number Sense Standards**
The student will:
1. represent numbers in a variety of equivalent forms.
4. solve problems involving arithmetic operations with fractions and mixed numbers.
5. select appropriate operations to solve problems involving rational numbers, ratios, proportions, and percents.

**Patterns, Relations, and Functions Standards**
The student will:
7. apply maximums and minimums to various problem situations.

**Reading Standards**
The student will:
1. construct meaning from text using context and semantic clues.
3. ask questions and make predictions about information or the message found in text.
5. use background knowledge and experience to comprehend text.

**Science, Technology, Environment, and Society Standards**
The student will:
9. discuss a solution for a problem or a need.

**Speaking Standards**
The student will:
1. emphasize important points to assist the listener in following main ideas and concepts.
6. present information in conversational and small group settings.

**Statistics and Probability Standards**
The student will:
1. identify different ways to select samples and determine when to use sample data.
3. analyze how data is displayed and its impact on conclusions reached.
4. use data to support or reject hypotheses.

**Writing Standards**
The student will:
17. edit final copies for correct spelling, capitalization, and punctuation.

**MATERIALS NEEDED:**

- Letter to Parents (included in lesson)
- Student Handout *Food Guide Pyramid* (included in lesson)
- Student Handout *Building on Grains* (included in lesson)
- Student Handout *Building With Words* (included in lesson)
- Student Handout *Field of Grains* (included in lesson)
- Five sheets of white poster board for cooperative learning groups
- White glue
- Representative grains for mosaic: popcorn, rice, puffed wheat, oats
- Rulers
- Student Handout *Fractions in a Field* (included in lesson)
- Student Handout *Perimeters in a Field* (included in lesson)
- Student Handout *Areas in a Field* (included in lesson)
- Student Handouts *Wheat Edits* (included in lesson)
- Colored highlighters for editing
- Student Handouts *Problem Solving Cards* (included in lesson)
- Student Handout *Wheat Field Figures* (included in lesson)
- Student Handout *Acres of Wheat* (included in lesson)
- Student Handout *Party Grain Mix* (included in lesson)
- Ingredients for Party Grain Mix (recipe included in lesson)
- Parent Survey (included in lesson)

**BACKGROUND INFORMATION:**

Although there are no "bad" foods, the *Dietary Guidelines for Americans* recommend letting the *Food Guide Pyramid* guide your food choices to make sure you get all the nutrients and other substances needed for good health. Healthy eating patterns start with the three food groups at the base of the *Food Guide Pyramid*: grains, fruits, and vegetables. Eating a variety of grains (especially whole grain foods), fruits, and vegetables is the basis of healthy eating.

The recommended number of servings from the "Bread, Cereal, Rice & Pasta Group" of the *Food Guide Pyramid* varies from six to eleven servings per day. The number of servings depends on your age. Children ages two to six years, women, and some older adults need six servings daily. Older children, teen girls, active women, and most men need nine servings daily. Teen boys and active men need eleven servings daily. Many of the serving sizes given on the *Food Guide Pyramid* are smaller than those on the Nutrition Facts Label. For example, one serving of cooked cereal, rice, or pasta is one cup on a food label but only ½ cup on the *Pyramid*. Some foods from the "Bread, Cereal, Rice, & Pasta Group" may have a lot of sugar or fat added. These foods can be a part of a healthy diet if they are used sparingly.

Choosing foods from the "Bread, Cereal, Rice & Pasta Group" for breakfast can be the foundation of the day just as this food group is the foundation of the *Food Guide Pyramid.* Foods from this food group provide lots of energy that is important to support the requirements of a busy day. One of the most popular foods from this group for breakfast is ready-to-eat cereal. These can sometimes take sometimes take up an entire aisle in grocery stores because of the consumer demand for quick, easy, and nutritious foods for breakfast. However, there are many other food combinations that can be chosen to make the breakfast meal interesting and nutritious.

A healthy breakfast is important for everyone, especially growing children. There are several reasons to eat breakfast:

- Kids who eat breakfast do better in school and are more alert.
- Attention span and memory are increased.
- Behavior and attitudes are improved.
- A smart breakfast provides nutrients needed for growth.
- Kids who eat breakfast usually feel better.
- Kids who eat breakfast usually have better attendance that those who do not eat breakfast.

**PROCEDURES:**

1. Referring to a *Food Guide Pyramid*, tell the students that the *Building on Grains* unit will concentrate on the "Bread, Cereal, Rice & Pasta Group."

2. Share the Background Information with the class. Call attention to the third paragraph. "Bread, Cereal, Rice & Pasta Group" is identified as the foundation of the *Food Guide Pyramid* and breakfast is named as the foundation for the day. Discuss reasons for eating breakfast as described in the fourth paragraph. Lead the class in naming breakfast foods that are a part of this food group.

3. Send home the parent letter to share information about the unit.

4. Provide *Building on Grains* and *Building With Words* to students and allow time for students to read the selection and complete the vocabulary development activity. Lead the class in a discussion of the selection.

5. Provide a loaf of white bread, wheat bread, and whole wheat bread. Direct the students to compare the ingredients of each type of bread by reading the label. Compare the nutritional value of the three types of bread. Cut slices of each type of bread in half and allow students to taste each type of bread. What differences in taste and texture can be identified?

6. Ask student to speculate on which grain is the most common in South Dakota in breakfast cereals. Let students share their ideas and provide explanations on how they arrived at their hypotheses.

7. Begin a class collection of empty cereal boxes. Using the name of the cereal and/or the ingredients label on each box, identify the grain or grains contained in the cereal. Sort the cereal boxes into grain groups and label each collection with the grain from which it is made. (For example, corn flakes will go with corn, "Wheaties" will go with wheat, and oatmeal will go with oats.) One group should be labeled "More Than One Grain" for cereals made of a combination of grains.

8. After several days of collecting, count the number of cereals in each grain category. What grain has the most cereal products? Which grain has the least cereal products on display? Divide the class into learning pairs. Instruct each learning pair to construct a graph using the data from the sampling of cereal boxes. From the data collected, which grain is the most common in breakfast cereals in South Dakota? Were their speculations correct?

9. Divide the class into cooperative learning groups and provide each group with *Field of Grains*. Each group should follow the instructions to make a field using poster board, glue, representative grains and rulers. (Allow time for planning the field one day and students can begin working on the project the next.)

10. When each group has completed the *Field of Grains*, review fractions and fractional parts of a whole. Provide *Fractions in a Field* to each student to complete using the measurements of the group's *Field of Grains* mosaic.

11. After completing the activity and discussing the answers to *Fractions in a Field,* review finding perimeters. Distribute *Perimeters in a Field* to students to complete using the measurements of the *Field of Grains* mosaic.

12. Review the formula for finding areas. Give students an *Areas in a Field* to complete.

13. Identify wheat as the world's largest and most widely cultivated food crop. Provide the four-page set of *Wheat Edits* to the class. Review the tips for editing the paragraphs given below the instructions. Allow students to work together in learning pairs to read and edit each paragraph.

14. After allowing time for editing, lead the class in a discussion of the content of the paragraphs.
    A. Read paragraph 2 and discuss the significance of wheat production to the world, the United States, and South Dakota.
    B. Read paragraph 3 and discuss the invention on the reaper. Share with the class that by hand, farmers could cut only 2 acres of wheat a day. With Cyrus McCormick's invention, farmers could cut 8 acres a day. Today's modern combines can harvest 1,000 bushels of wheat an hour, cutting an acre of wheat in 6 minutes or less. In other words, today's combines can cut enough wheat to make 73,000 loaves of bread every hour! How did this invention provide a solution to an agricultural problem or need? What effects did the invention of the reaper and later machinery have on the availability of nutritious foods?
    C. Read paragraph 4 and compare the difference in white flour and whole-wheat flour.
    D. Read paragraph 5 and share with the class that a farmer only receives about 5¢ for the wheat in a loaf of bread. For an extended homework assignment, assign students to accompany their parents to the grocery store to identify prices on different brands and varieties of bread. After students have collected various prices of loaves of bread, lead the class in figuring the percentage of the total cost of a loaf of bread that goes to the farmer.
    E. Read paragraph 7 to review and discuss the different units of measurement.

15. Share with the class that many breakfast foods are made from wheat. Ready-to-eat breakfast cereals containing wheat include bran flakes, puffed wheat, shredded wheat, wheat flakes and others. Many other breakfast foods are made from wheat: toast, bagels, doughnuts, breakfast bars, muffins, and others.

16. Copy three sets of *Problem Solving* cards and cut apart the cards on the dotted line. Randomly, distribute the cards giving each student one card. Allow each student to choose a partner who has a different card to make a learning pair. Allow the learning pairs to work together to solve the problems on their cards. When the problems are completed, ask each learning pair to share their problems with the class and explain the process used in finding the answers. Repeat this procedure until all learning pairs have shared and explained their problems.

17. Distribute *Wheat Field Figures* and ask students to answer the questions based on the fields drawn on the page.

18. Provide *Acres of Wheat* for homework based on the farms drawn on the page.

19. Review fractions, improper fractions, and mixed numbers. Provide students *Party Grain Mix* and assign students to double the recipe and write the recipe using mixed numbers. Ask students to recognize that the recipe includes a variety of breakfast cereals used to make a party snack.

20. Analyze the recipe for nutrition value. Note that the recipe is not low fat because of the amount of margarine. However, all foods can be a part of a healthy diet if used in moderation.

21. Use the completed recipe to prepare *Party Grain Mix* in class to celebrate the study of grains.

**EXTENSION ACTIVITIES:**

1. After discussing "value-added" products from paragraph 5 of *Wheat Edits,* make a display of other food products in their raw forms and in different stages of processing. Ask students to contribute to the display by bringing products to school. The display can be any foods that are available to demonstrate the processing:
   - fresh ear of corn, canned corn, corn chips
   - fresh tomatoes, canned tomatoes, tomato sauce, ketchup

2. Provide several varieties of breads for tasting and comparing. Suggestions include rye, wheat, multi-grain, oatmeal bran, a name brand white, a store brand white, sourdough, French, Italian, a fat free variety, and buttermilk breads. Cut slices of bread into bite-size pieces for sampling and arrange on plates with no names or brands being revealed. Each plate should be given a number for identification. The numbers should be displayed with the bread. Allow students to sample each variety of bread and vote for the variety with the preferred taste. Reveal the names of the varieties.

3. Ask students to read labels to find wheat listed as an ingredient. Begin a collection of wheat product labels and packages. Cereal boxes, bread, crackers, packaged snacks, and prepared mixes are possibilities.

4. Listen to *America the Beautiful*. Discuss the "amber waves of grain" in the song. Ask students to draw a picture that illustrates patriotism. The drawing should include a wheat field with amber waves of grain.

5. Utilize the collection of cereal boxes for additional activities:
   A. Referring to the ingredients panels on the boxes, analyze each cereal for nutritional value and sugar content. Analyze the nutritional value of each cereal by comparing the % Daily Value of Vitamin A, Vitamin C, Iron, and Calcium.
   B. Compare the nutritional value listed in the "with milk" and "without milk" columns of the Nutrition Facts label.

6. Assign each student a grain to research using various sources: Internet, dictionaries and encyclopedias. Reports should be presented to the class that include how and where the grain is produce and what foods are produced from the grain.

7. Take the class on a field trip to a grain elevator or wheat farm during wheat harvest. As an alternative, invite a farmer to the classroom to provide information on producing wheat.

8. Contact the county extension office for possible resource speakers on grain production in South Dakota.

**EVALUATION:**

**Participation**

- Did students listen attentively and participate in class discussions?
- Did students read *Building on Grains* independently?
- Did students participate in the bread comparison?
- Did students contribute to the empty cereal box collection?
- Did students work together in groups to construct a field of grains?
- Did students participate in preparing and enjoying *Party Grain Mix*?

**Skills/Knowledge**

- Were students able to accurately complete *Building on Words*?
- Were students able to accurately complete *Perimeters in a Field*?
- Were students able to accurately complete *Fractions in a Field*?
- Were students able to accurately complete *Areas in a Field*?
- Were students able to edit paragraphs in *Wheat Edits* and make accurate revisions?
- Did students work together in learning pairs and correctly solve problems on *Problem Solving Cards*?
- Did students accurately complete *Wheat Field Figures*?
- Did students accurately complete *Acres of Wheat*?

**Behavior**

- Did students eat breakfast more often as a result of this study as reflected on the Parent Survey?
- Did students more closely follow the recommendations of the *Food Guide Pyramid* concerning the "Bread, Cereal, Rice & Pasta Group?"

ACKNOWLEDGMENTS:

*Nutrition and Your Health:* **Dietary Guidelines for Americans**
U. S. Government Printing Office
Superintendent of Documents
Mail Stop: SSOP
Washington, D.C. 20402-9328

**Eat Smart. Play Hard.™**
USDA Food and Nutrition Service
3101 Park Center Drive RM 1014
Alexandria, VA 22302-9943

North Dakota Wheat Commission
http://www.ndwheat.com

"Wheat," *World Book Online Americas Edition*
http://www.aolsvc.worldbook.com/

Kansas Wheat Commission
http://www.wheatmania.com

*Food for Thought*
Minnesota Agriculture in the Classroom
90 West Plato Boulevard
St. Paul, MN 55107

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Chandler, AZ 85224

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408 Kennedy Hall
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Oklahoma Ag in the Classroom
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National FFA Organization
P. O. Box 68960
Indianapolis, IN 46268

Dear Parents,

Our class is beginning a study called *Building on Grains.* Our study will concentrate on wheat and foods from the "Bread, Cereal, Rice & Pasta Group" of the *Food Guide Pyramid*, especially breakfast foods. *The Food Guide Pyramid* recommends from six to eleven servings per day from this food group. The number of servings depends on age. Children ages two to six years, women, and some older adults need six servings daily. Older children, teen girls, active women, and most men need nine servings daily. Teen boys and active men need eleven servings daily.

The *Dietary Guidelines for Americans* recommend choosing a variety of grains daily, especially whole grains. Different whole grain foods differ in nutrient content, so it is important to choose a variety of whole and enriched grains. Whole grains offer health benefits because they differ from refined grains in the amount of fiber and nutrients they provide. Eating plenty of whole grains may help protect against many chronic diseases.

Choosing foods from the "Bread, Cereal, Rice & Pasta Group" for breakfast can be the foundation of the day just as this food group is the foundation of the *Food Guide Pyramid.* Foods from this food group provide lots of energy that is important to support the requirements of a busy day.

A healthy breakfast is important for everyone, especially growing children. There are several reasons to eat breakfast:

- Kids who eat breakfast do better in school and are more alert.
- Attention span and memory are increased.
- Behavior and attitudes are improved.
- A smart breakfast provides nutrients needed for growth.
- Kids who eat breakfast usually feel better.
- Kids who eat breakfast usually have better attendance that those who do not eat breakfast.

If you would like to become involved in this study, read the suggestions and check the ones that you are willing to do to help reinforce our lessons.

_____Your child has been assigned to visit a grocery store to identify prices on different kinds of bread. This assignment will require that you take your child with you when you shop for groceries. Taking your children with you when you shop for groceries is a good way to encourage kids to help plan healthy meals and will also give them the opportunity to use knowledge learned in this study.

_____We will be involved in an art project and your child may ask you for rice, puffed wheat, popcorn, or oats for a mosaic.

_____We will begin a collection of empty cereal boxes. Please save a few for us and send to school.

_____Keep ready-to-eat cereal, bagels, or breakfast bars on hand for a quick and nutritious breakfast.

_____Be creative with breakfast foods. Try burritos, pizza, scrambled eggs in tortillas, peanut butter and banana on a tortilla, or adding dried fruits and nuts to oatmeal and rice.

_____Celebrate special occasions at breakfast.

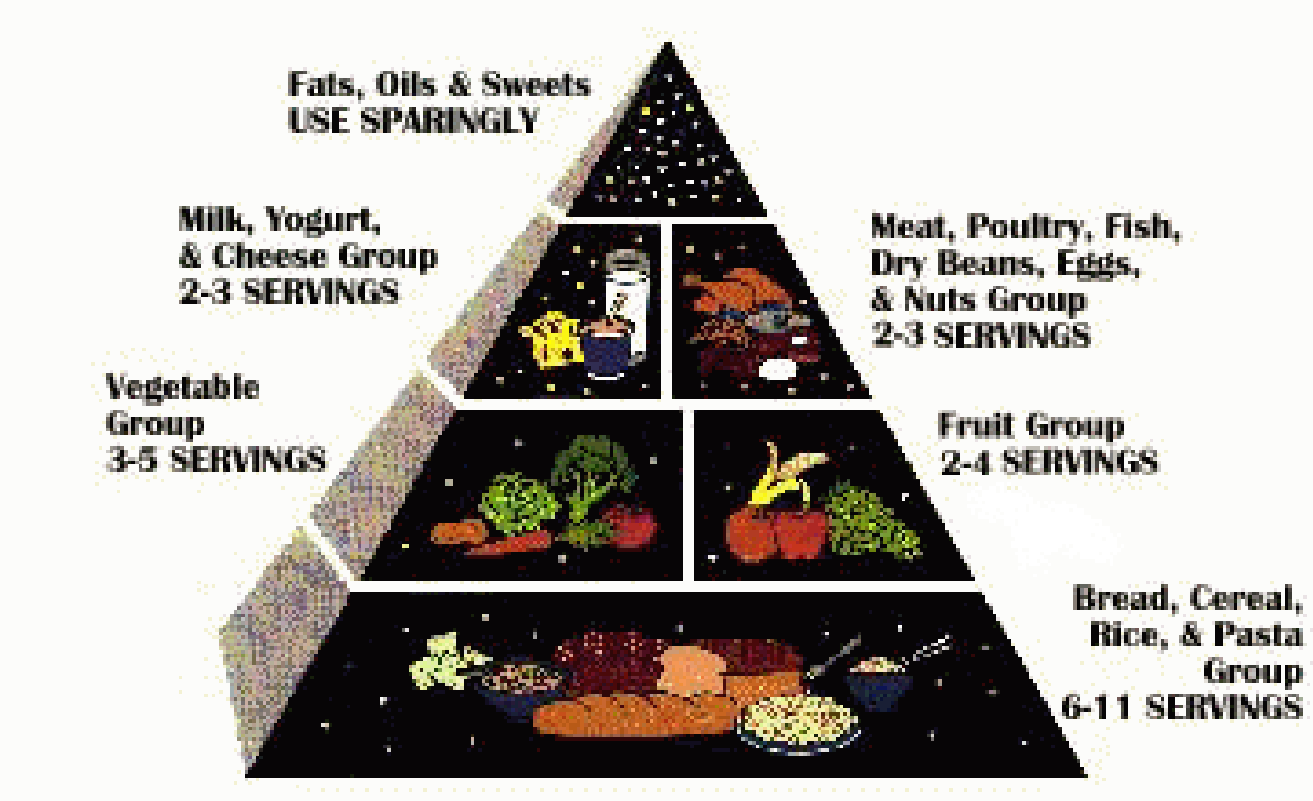
_____Encourage you child to prepare help prepare breakfast.

We are looking forward this study. Thank you for being a part of our learning team!

Sincerely,

# Food Guide Pyramid

## A guide to daily food choices.




Use the Food Guide Pyramid to help you eat better everyday… the Dietary Guidelines way. Start with plenty of Breads, Cereals, Rice, and Pasta; Vegetables; and Fruits. Add two to three servings from the Milk Group and two to three servings from the Meat Group. Each of these food groups provide some, but not all, of the nutrients you need. No one food group is more important than the others—for good health you need them all. Go easy on the fats, oils, and sweets, the foods in the small tip of the Pyramid.

# BUILDING ON GRAINS

The "Bread, Cereal, Rice & Pasta Group" is the foundation of the *Food Guide Pyramid*. It recommends from six to eleven servings per day from this food group.
Foods in this group are made from grains. Grains in this food group include wheat, rice, oats, barley, rye, and corn.

*The Dietary Guidelines for Americans* recommend choosing a variety of grains daily, especially whole grains. Additionally, different whole grain foods differ in nutrient content, so it is important to choose a variety of whole and enriched grains. Whole grains offer health benefits because they differ from refined grains in the amount of fiber and nutrients they provide. Eating plenty of whole grains may help protect you against many chronic diseases. To increase your intake of whole grain foods, choose foods that name one of the following ingredients *first* on the label's ingredient list:

| | | | |
|---|---|---|---|
| brown rice | oatmeal | whole oats | whole rye |
| popcorn | whole wheat | pearl barley | whole grain corn |
| graham flour | bulgur (cracked wheat) | | |

Refined grains are low in fiber and in the protective substances that accompany fiber. "Wheat flour," "enriched flour," and "degerminated cornmeal" are not whole grains. A comparison of the ingredient items in white bread, wheat bread, and whole wheat bread will reveal that wheat bread is the same as white bread with caramel coloring added.

**Try some of these whole grain foods**:

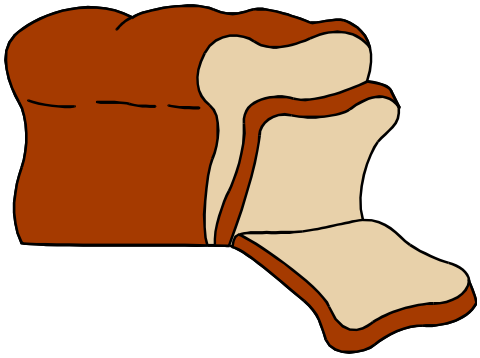
- whole wheat bread
- whole grain ready-to-eat cereal
- low-fat whole wheat crackers
- oatmeal
- whole wheat pasta
- whole barley in soup

**Student Handout** **Name**_____

# BUILDING WITH WORDS

**Directions:** Read *Building on Grains*. Find and circle the following vocabulary words in the text. Read the definitions of the vocabulary words. Write the letter for each vocabulary word in the space to identify the meaning of the word as it is used in *Building on Grains*.

_____whole
_____chronic
_____enriched
_____benefits
_____refined
_____protective
_____accompany
_____degerminated
_____reveal
_____foundation
_____content
_____fiber
_____caramel
_____ingredient
_____variety
_____nutrient

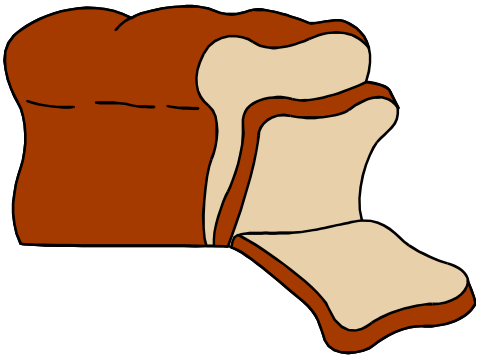


A. any of the things that a mixture is made of
B. the quality or state of having different forms or types
C. any of the thin parts like threads that form the tissue of animals and plants
D. the basis on which something stands
E. to improve by adding vitamins and minerals in processing
F. going on for a long time or coming back again and again
G. help or advantages
H. a nutritive substance or ingredient; furnishing nourishment
I. substance used for a coloring or flavoring agent
J. to reduce to a pure state
K. that protects or helps to protect
L. to go along with; be together with
M. sprouting section removed
N. to show plainly
O. entire; having all its proper components or components; unmodified
P. the amount of material contained

# BUILDING WITH WORDS

**Directions:** Read *Building on Grains*. Find and circle the following vocabulary words in the text. Read the definitions of the vocabulary words. Write the letter for each vocabulary word in the space to identify the meaning of the word as it is used in *Building on Grains*.

__O__ whole
__F__ chronic
__E__ enriched
__G__ benefits
__J__ refined
__K__ protective
__L__ accompany
__M__ degerminated
__N__ reveal
__D__ foundation
__P__ content
__C__ fiber
__I__ caramel
__A__ ingredient
__B__ variety
__H__ nutrient



A. any of the things that a mixture is made of
B. the quality or state of having different forms or types
C. any of the thin parts like threads that form the tissue of animals and plants
D. the basis on which something stands
E. to improve by adding vitamins and minerals in processing
F. going on for a long time or coming back again and again
G. help or advantages
H. A nutritive substance or ingredient; furnishing nourishment
I. substance used for a coloring or flavoring agent
J. to reduce to a pure state
K. that protects or helps to protect
L. to go along with; be together with
M. sprouting section removed
N. to show plainly
O. entire; having all its proper components or components; unmodified
P. the amount of material contained

**Student Handout**

# FIELD OF GRAINS

**Directions:**

Create a *Field of Grains* mosaic by drawing a field that is divided into four sections. First, sketch the field on the bottom of this sheet according to the directions given. Next, draw the field using the measurements given on a sheet of white poster board. After the field is drawn on poster board, spread a thin layer of white glue on each section of the field and glue representative grains in each section. Use popcorn, rice, oats, and puffed wheat to create the mosaic.

**Instructions for drawing the field:**

1. The field is a parallelogram with sides measuring 12 inches and 20 inches.

2. The field is divided into four sections. Each section of the field is a parallelogram with one side measuring 20 inches.

3. One fourth of the field is planted in corn.

4. One third of the field is planted in wheat.

5. One sixth of the field is planted in oats.

6. The wheat section of the field is next to the oats section of the field.

7. One fourth of the field is planted in rice.

8. The rice section of the field does not touch the wheat section.

9. The corn section of the field does not touch the wheat section.

10. The oats section of the field has grains on both sides.

# FIELD OF GRAINS

1 inch X 20 inches per section
12 sections
1/4 of field = 3/12
1/3 of field = 4/12
1/6 of field = 2/12

One possibility illustrated below:

| rice | rice | rice | corn | corn | corn | oats | oats | wheat | wheat | wheat | wheat |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

# FRACTIONS IN A FIELD

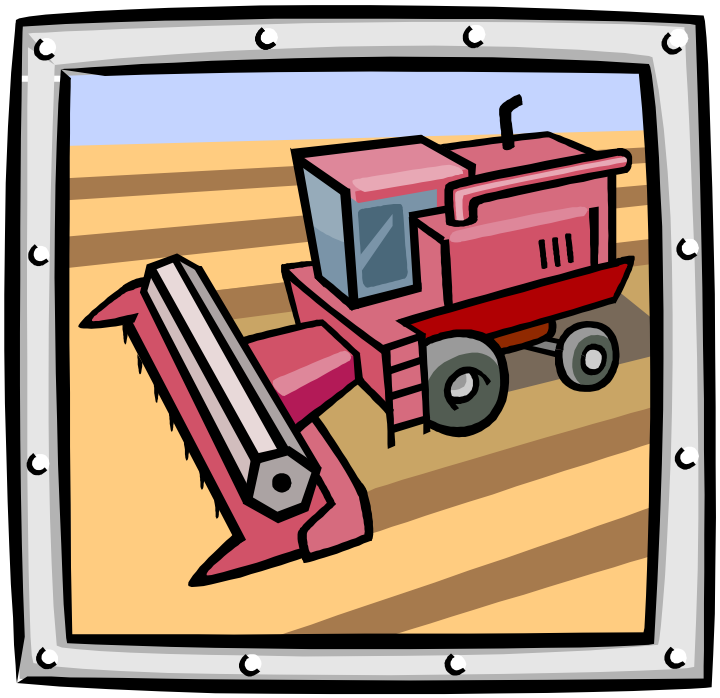
**Using the completed mosaic, answer the following questions:**

1. What fractional part of the field is planted in *wheat* and *oats*?_____
2. What fractional part of the field is planted in *corn* and *rice*?_____
3. What fractional part of the field is planted in *wheat, rice* and *oats*?_____
4. What fractional part of the field is planted in *corn, oats* and *rice*?_____
5. What fractional part of the field is planted in *oats*, *wheat,* and *corn*?_____
6. If the *oats*, *corn,* and *rice* sections of the field were removed, what fractional part of the field would be left?_____
7. If the *wheat* and *oats* sections of the field were removed, what fractional part of the field would be left?_____

# PERIMETERS IN A FIELD

**Using the completed mosaic, answer the following questions:**

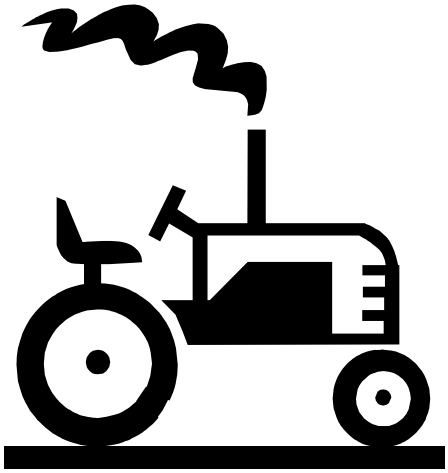
1. What is the perimeter of the section of the field planted in *corn*?_____
2. What is the perimeter of the section of the field planted in *corn* and *rice*?_____
3. What is the perimeter of the section of the field that is planted in *corn*, *oats*, and *rice*?_____
4. What is the perimeter of the entire field of grains?_____
5. What is the perimeter of the section of the field planted in *wheat*?_____
6. What is the perimeter of the section of the field planted in *oats* and *wheat*?_____
7. What is the perimeter of the section of the field planted in *rice*?_____



# AREAS IN A FIELD

**Using the completed mosaic, answer the following questions:**

1. What is the area of the entire field of grains? _____
2. What is the area of the *wheat* section of the field?_____
3. What is the area of the *wheat* and *oats* sections of the field?_____
4. What is the area of the *corn* and *rice* sections of the field?_____
5. What is the area of the *wheat, oats,* and *corn* sections of the field?_____
6. What is the area of the *rice* section of the field?_____
7. What is the area of the *corn* section of the field?_____



*Answer Key*

# FRACTIONS IN A FIELD

**Using the completed mosaic, answer the following questions:**

1. What fractional part of the field is planted in *wheat* and *oats*? *1/2*
   *1/3 wheat = 4/12*
   *1/6 oats = 2/12*
   *2/12 + 4/12 = 6/12 = ½*
2. What fractional part of the field is planted in *corn* and *rice*? 1/2
   *1/4 corn = 3/12*
   *1/4 rice = 3/12*
   *1/4 + 1/4 = 2/4 = ½*
3. *What fractional part of the field is planted in wheat, rice and oats?* *3/4*
   *1/3 wheat = 4/12*
   *1/4 rice = 3/12*
   *1/6 oats = 2/12*
   *4/12 + 3/12 + 2/12 = 9/12 = 3/4*
4. What fractional part of the field is planted in *corn, oats* and *rice*? 2/3
   *1/4 corn = 3/12*
   *1/6 oats = 2/12*
   *1/4 rice = 3/12*
   *3/12 + 2/12 + 3/12 = 9/12 = 3/4*
5. What fractional part of the field is planted in *oats*, *wheat,* and *corn*? 3/4
   *1/6 oats = 2/12*
   *1/3 wheat = 4/12*
   *1/4 corn = 3/12*
   *2/12 + 4/12 + 3/12 = 9/12 = 3/4*
6. If the *oats*, *corn,* and *rice* sections of the field were removed, what fractional part of the field would be left? 1/3
   3/3 -2/3 = 1/3
7. If the *wheat* and *oats* sections of the field were removed, what fractional part of the field would be left? 1/2
   *2/2 - ½ = ½*

*Answer Key*

# PERIMETERS IN A FIELD

**Using the completed mosaic, answer the following questions:**

1. What is the perimeter of the section of the field planted in *corn*? 46 inches
2. What is the perimeter of the section of the field planted in *corn* and *rice*? 52 inches
3. What is the perimeter of the section of the field planted in *corn*, *oats*, and *rice*? 56 inches
4. What is the perimeter of the entire field of grains? 64 inches
5. What is the perimeter of the section of the field planted in *wheat*? 48 inches
6. What is the perimeter of the section of the field planted in *oats* and *wheat*? 52 inches
7. What is the perimeter of the section of the field planted in *rice*? 46 inches

*Answer Key*

# AREAS IN A FIELD

**Using the completed mosaic, answer the following questions:**

1. What is the area of the entire field of grains? 240 square inches
2. What is the area of the *wheat* section of the field? 80 square inches
3. What is the area of the *wheat* and *oats* sections of the field? 120 square inches
4. What is the area of the *corn* and *rice* sections of the field? 120 square inches
5. What is the area of the *wheat, oats,* and *corn* sections of the field? 180 square inches
6. What is the area of the *rice* section of the field? 60 square inches
7. What is the area of the *corn* section of the field? 60 square inches

**Student Handout** **Name**_____

# WHEAT EDITS

**Directions:** Read each paragraph to find spelling, punctuation, and capitalization errors. Highlight the errors with a colored highlighter. Write the corrections in the order in which they appear in the paragraph on the lines.
**Tip:** Watch for these errors:

apostrophe to show possessive
apostrophe to show contraction
capitalization of common and proper nouns
capitalization of states and nations
capitalization of names
spelling of homophones
spelling of plural words

---

**1** Wheat is the worlds largest and most widely cultivated food crop. About one-seventh of all farmland around the world is used for growing wheat. Wheat is a hardy crop that can sometimes be groan where other crop cannot be groan. The wheat plant consists of routes, a stem, long slender leafs, and a head which has kernels. *Kernel* is another name for seed. Wheat has been cultivated and consumed for food for many thousands of year. History shows that people eight wheat more than 17,000 years ago by chewing kernels of the wild grain. (8 errors)

**Write the corrections here:**

1. _____ 2. _____
3. _____ 4. _____
5. _____ 6. _____
7. _____ 8. _____

**2** Wheat is not native to the United states. It was first planted in the United States in 1777 as a hobby crop. Today, the United states is the worlds largest producer of wheat. Wheat from america feeds millions of people all over the world. The United States exports about $3.6 billion of wheat to foreign countries each year. One of the countrys that bys our wheat is china. South dakota is one of the top wheat-producing states. It ranks seventh among the states in the production of wheat with about $402 million of wheat sold each year. (8 errors)

**Write the corrections here:**

1. _____ 2. _____
3. _____ 4. _____
5. _____ 6. _____
7. _____ 8. _____

---

**3** Long ago, farmers harvested wheat buy hand. The stalks were cut, tied into bundles and gathered into piles. To thresh the grain, the stalks were beet with a stick to loosen the grain from the stalks. Machines were developed to make wheat harvesting easier. The first reaping machine was invented by cyrus McCormick in 1834. The development of Machines reduced the amount of human labor needed to grow wheat. Before the use of machines, it took a Farmer about 64 ours of work to raise one acre of wheat. Today, it takes less than three hours of labor to produce an acre of wheat. (6 errors)

**Write the corrections here:**

1. _____ 2. _____
3. _____ 4. _____
5. _____ 6. _____

**4** After wheat is harvested from the farm, it goes to a mill where its cleaned and processed into flour. It goes threw rollers that scrape off the outer bran layer and brake the endosperm. The bran is the outer layer of a wheat kernel and the endosperm is the white, inner part of a wheat kernel that is ground for white flower. It continues threw a series of rollers and sifters until its fine enough for flour, and the bran and germ have been separated. For hole-wheat flour, the bran and the germ remain with the ground endosperm. The germ is the sprouting section of a wheat kernel that is hi in oil. Bran is included in whole-wheat flour for additional fiber. (8 errors)

**Write the corrections here:**

1. _____ 2. _____
3. _____ 4. _____
5. _____ 6. _____
7. _____ 8. _____

---

**5** After the wheat has been ground into flour, it goes threw another stage of processing where its mixed with other ingredients. The wheat flower is then ready to be maid into bread, rolls, muffins, buns, serials, cakes, crackers spaghetti, macaroni, and cookies for consumers to enjoy. Each step of the processing add's more value too the final product. For that reason, a product that has been processed is called a "value-added" product. Consumers are willing to pay more for bread than they are for wheat kernels. (8 errors)

**Write the corrections here:**

1. _____ 2. _____
3. _____ 4. _____
5. _____ 6. _____
7. _____ 8. _____

**6** **WHEAT FACTS**

- The average american consumes about 116 pounds of wheat each years.
- A bushel of wheat ways about 60 pounds.
- One 60-pound bushel of wheat provides about 42 pounds of flower.
- It takes about 3 cups of flour to way about one pound.
- About 70 one-pound loafs of bread can be made from one bushel of wheat.
- A family of four could live ten year off the bread produced by one acre of wheat.
- More foods are made with wheat than any other serial grain.
- The wheat kernel is sometimes called the wheat berry.
- One bushel of wheat makes over 1000 slice of bread.
- The wheat seed has 3 parts the endosperm, the bran, and the germ. (10 errors)

**Write the corrections here:**

1. _____ 2. _____
3. _____ 4. _____
5. _____ 6. _____
7. _____ 8. _____
9. _____ 10. _____

---

**7** Different measurements are used for different things. Sometimes its necessary to no how to convert units of measure within a measurement system. Farm land is measured and sold buy the acre. An acre is about the size of a football field. However, sometimes land is measured by the foot when its sold in lots. Wheat is measured and sold buy the bushel. However, the bushels are determined by the number of pounds. Flour is measured and sold by the pound. Home recipes usually measure flour by the cup. Sometimes recipes used to make large quantitys of food measure flour by the pound. Some of the recipes that are used in the school cafeteria measure flour by the pound. Their maid to serve a large number of people. (8 errors)

**Write the corrections here:**

1. _____ 2. _____
3. _____ 4. _____
5. _____ 6. _____
7. _____ 8. _____

*Answer Key*

***Paragraph 1***

1. world's
2. grown
3. crops
4. grown
5. roots
6. leaves
7. years
8. ate

***Paragraph 2***

1. States
2. States
3. world's
4. America
5. countries
6. buys
7. China
8. Dakota

**Paragraph 3**

1. by
2. beet
3. Cyrus
4. machines
5. farmer
6. hours

**Paragraph 4**

1. it's
2. through
3. break
4. flour
5. threw
6. it's
7. whole
8. high

**Paragraph 5**

1. through
2. it's
3. flour
4. made
5. cereals
6. crackers, spaghetti
7. adds
8. to

**Paragraph 6**

1. American
2. year
3. weighs
4. flour
5. weigh
6. loaves
7. years
8. cereal
9. slices
10. : (colon goes after *parts)*

**Paragraph 7**

1. it's
2. know
3. by
4. it's
5. by
6. quantities
7. They're
8. made

**Name**

**1 A** A recipe for blueberry muffins calls for 3 cups of flour. The recipe makes 24 muffins. Using this recipe, how many muffins could be made from one bushel of wheat?

**B** A farmer has a 50-acre field of wheat. When the wheat was harvested, the field produced 55 bushels per acre. If 75% of the wheat produced was used to make one-pound loaves of bread, how many loaves of bread were made from the wheat in the field?

---

**Name**

**2 A** A recipe for pancakes uses 1 ½ cups flour and makes 16 pancakes. How many waffles can be made from a five-pound bag of flour?

The school cafeteria had a fifty-pound bag of flour and used 65% of the flour to prepare muffins for the sixth graders. How many cups were left in the bag after preparing the muffins? Write the answer as a mixed number.

**Name**

**3 A** The average American consumes about 116 pounds of wheat each year in food products. If the weight of the flour is 70% of the weight of the wheat, how many cups of flour does the average American consume in one year? Round the answer to the nearest whole number.

**B** Marcy had a five-pound bag of flour and used 30% of the flour for biscuits. How many cups are left in the bag? Write the answer using a mixed number in lowest terms.

---

**Name**

**4 A** A Recipe for pancakes makes 16 pancakes and uses 1 ½ cups of flour. Using this recipe how many pancakes can be made from a bushel of wheat?

Mrs. Thomas bought 6 ten-pound bags of whole-wheat flour to make whole-wheat rolls for the sixth graders. She used 90% of the flour and made 486 rolls. How many rolls were made with each cup of whole-wheat flour she used?

**Name**

**5** **A** A recipe for waffles makes 8 waffles and uses 2 cups of flour. How many waffles can be made from one bushel of wheat?

**B** The school cafeteria uses a recipe for cinnamon rolls that measures flour by the pound. If the recipe uses twenty pounds of flour and makes 300 rolls, how many rolls are made from one cup of flour?

---

**Name**

**6** Kim is on her way to the store to pick up some bagels and muffins for breakfast. She turned right from her house and walked straight for five blocks and stopped at her friend's house. She turned left at her friend's house and walked straight for seven blocks and stopped at the post office to mail a letter. She turned at the post office and walked straight for six blocks and stopped at the library to return a book. She turned left at the library and walked five blocks to the store and picked up the bagels and muffins. Give the directions for her to take the quickest route home.

**Name**

**7** Martin wants to prepare a quick sandwich for breakfast. He looks in the cabinet and finds wheat, rye, and white bread. When he looks in the refrigerator, he finds chicken salad, sliced ham, and smoked turkey. He also sees that there is lettuce and tomato in the refrigerator. If he only puts one kind of meat on his sandwich, how many different ways could Martin prepare a breakfast sandwich? Explain your answer.

---

**Name**

**8** The sixth grade class painted a mural on one complete wall in the cafeteria at their school to show different kinds of breakfast foods in the "Bread Group." They started the mural on Monday and finished it on Friday. At first, the progress was slow but each day went faster. After the first day, they painted 3 ½ more feet each day than they had the day before. They painted 17 feet on Friday. How many feet did they paint on Monday? How long was the wall?

**Problem Solving Cards**

*Answer Key*

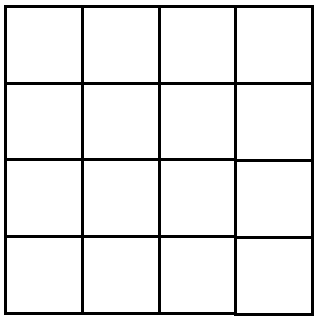
1. *A. 1008 muffins*
   *B. 144,375 loaves*
2. *A. 160 pancakes*
   *B. 52 ½*
3. *A. 243 3/5 = 244 cups*
   *B. 10 ½*
4. *A. 1,344 pancakes*
   *B. 3 rolls per cup of whole-wheat flour*
5. *A. 504 waffles*
   *B. 5 rolls per cup of flour*
6. *Go straight 2 blocks and turn left. Go one block.*
7. *36*
   *With each kind of bread, there are choices:*
   *bread and --chicken salad, ham slice, or smoked turkey (3)*
   ***or***
   *bread, tomato, and lettuce and --chicken salad, ham slice, or smoked turkey (3)*
   ***or***
   *bread, tomato and --chicken salad, ham slice, or smoked turkey (3)*
   ***or***
   *bread, lettuce and --chicken salad, ham slice, or smoked turkey (3)*
   *3 kinds of bread X 12 choices for each = 36 choices*
8. *50 feet*
   *(work the problem backwards) On Friday they painted 17 feet so 17-3 ½ is what they painted on Thursday (13 ½ feet) and 13 ½ - 3 ½ is what they painted on Wednesday (10 feet) and 10 - 3 ½ is what they painted on Tuesday (6 ½) and 6 ½ - 3 ½ = 3 feet is what they painted on Monday.*
   *3 + 6 ½ + 10 + 13 ½ + 17 = 50 feet in all*

**Student Handout** **Name**_____

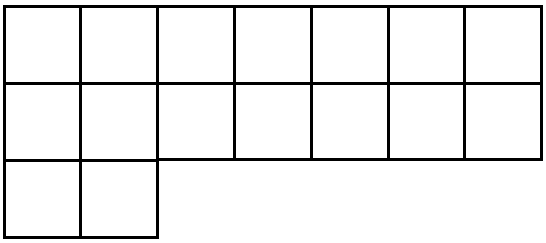
# WHEAT FIELD FIGURES

**Directions:** Look at the wheat fields to answer the questions.

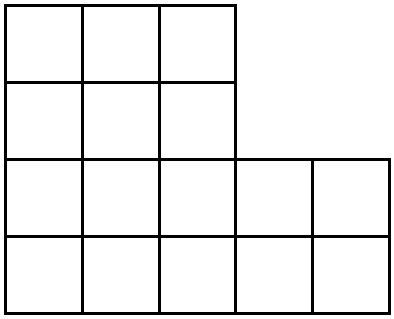
**Field A**



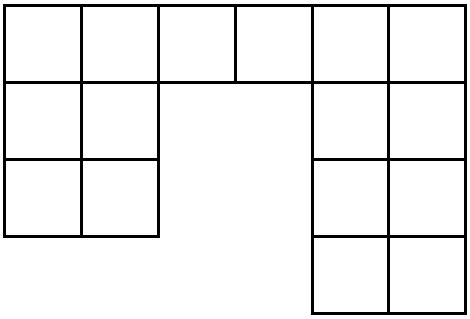
**Field B**



**Field C**



**Field D**



1. If a farmer needs to fence in the fields, which wheat field will require the most fencing?

2. Which wheat field will require the least fencing?

3. Each square represents an acre. How many acres are in each wheat field?

4. About 70 one-pound loaves of bread can be produced from one bushel of wheat. If the average yield of wheat is 55 bushels per acre, about how many loaves of bread can be produced from the wheat in each field?

5. The flour from a bushel of wheat weighs about 70% as much as a bushel of wheat. A bushel of wheat weighs 60 pounds. If the average yield of wheat is 55 bushels per acre, about how many five-pound bags of flour can be produced from the wheat in each field?

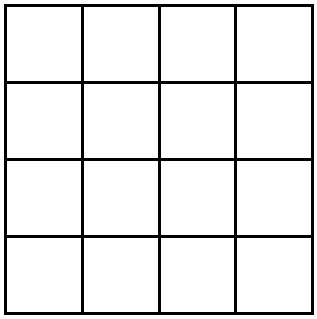
6. It takes about 3 cups of flour to weigh one pound. A bushel of wheat weighs 60 pounds. If the average yield of wheat is 55 bushels per acre, about how many cups of flour can be produced from the wheat in each field?

*Answer Key*

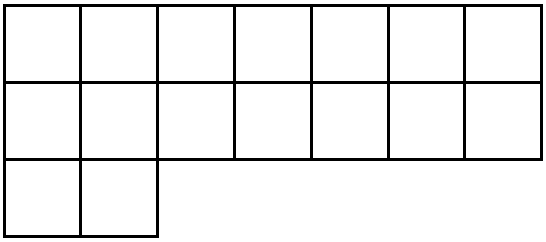
# WHEAT FIELD FIGURES

**Directions:** Look at the wheat fields to answer the questions.

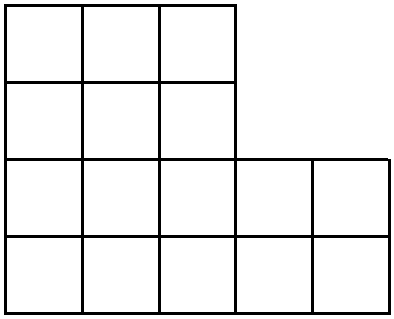
**Field A**



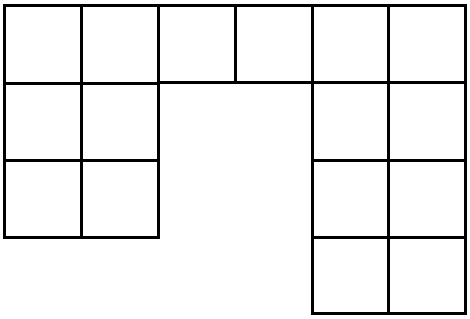
**Field B**



**Field C**



**Field D**



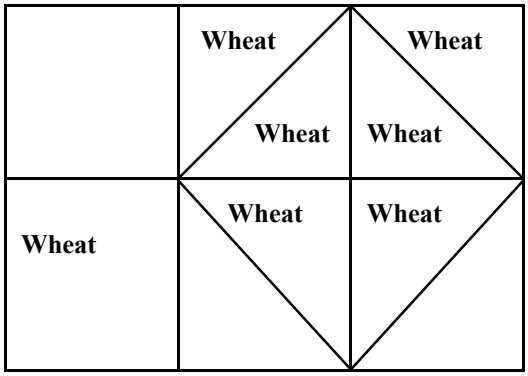
1. If a farmer needs to fence in the fields, which wheat field will require the most fencing?
   *Field D*
2. Which wheat field will require the least fencing?
   *Field A*
3. Each square represents an acre. How many acres are in each wheat field?
   *16 acres*
4. About 70 one-pound loaves of bread can be produced from one bushel of wheat. If the average yield of wheat is 55 bushels per acre, about how many loaves of bread can be produced from the wheat in each field?
   *61,600 loaves of bread*
5. The flour from a bushel of wheat weighs about 70% as much as a bushel of wheat. A bushel of wheat weighs 60 pounds. If the average yield of wheat is 55 bushels per acre, about how many five-pound bags of flour can be produced from the wheat in each field?
   *39,960 pounds of flour total would be 7,392 five-pound bags of flour*
6. It takes about 3 cups of flour to weigh one pound. A bushel of wheat weighs 60 pounds. If the average yield of wheat is 55 bushels per acre, about how many cups of flour can be produced from the wheat in each field?
   *158,400 cups of flour*

**Student Handout** **Name**_____

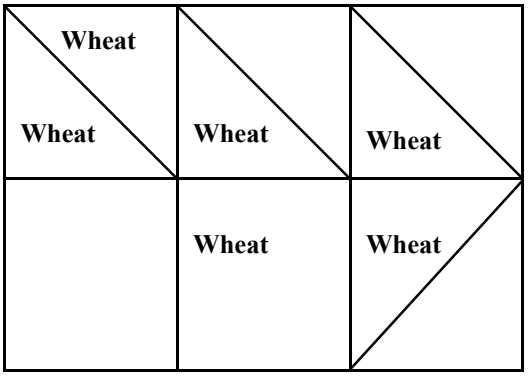
# ACRES OF WHEAT

**Directions:** There are four farms represented below. Each farm has 240 acres of land that is divided into 6 forty-acre fields. Some of the forty-acre fields are divided diagonally. Wheat is planted on each farm as designated. Refer to the diagrams to answer the questions at the bottom of the page.

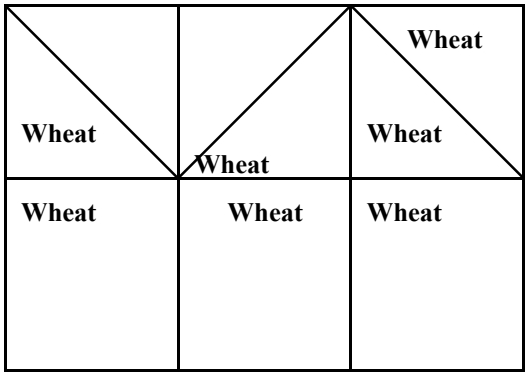
**FARM A**



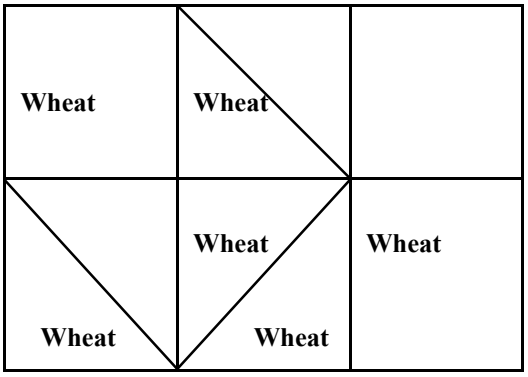

**FARM B**




**FARM C**




**FARM D**




1. Which farm has the largest area planted in wheat?_____
   How many acres of wheat are planted on this farm?_____

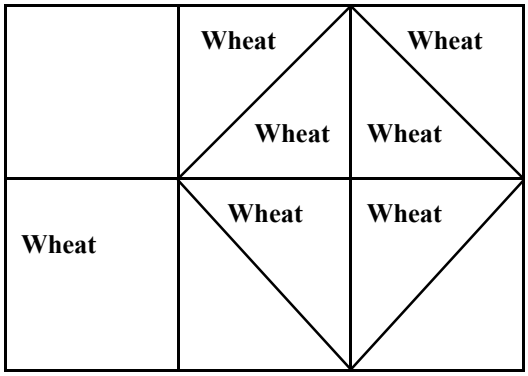
2. Which farm has the smallest area planted in wheat?_____
   How many acres of wheat are planted on this farm?_____

3. Which two farms have the same area planted in wheat?_____
   How many acres of wheat are planted on each of these farms?_____
4. About 70 loaves of bread can be produced from one bushel of wheat. If the average yield of wheat from each of the farms is 58 bushels per acre, about how many loaves of bread can be produced from the wheat produced on each farm?
   Farm A: _____
   Farm B: _____
   Farm C: _____
   Farm D: _____

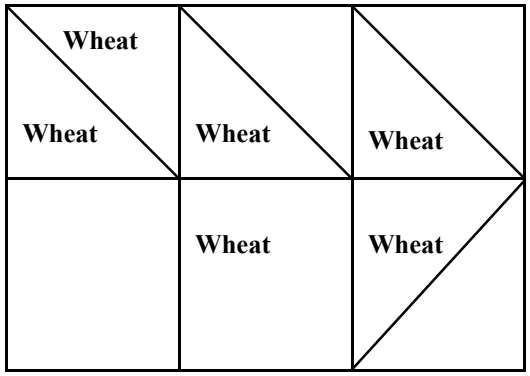
# ACRES OF WHEAT

**Directions:** There are four farms represented below. Each farm has 240 acres of land that is divided into 6 forty-acre fields. Some of the forty-acre fields are divided diagonally. Wheat is planted on each farm as designated. Refer to the diagrams to answer the questions at the bottom of the page.

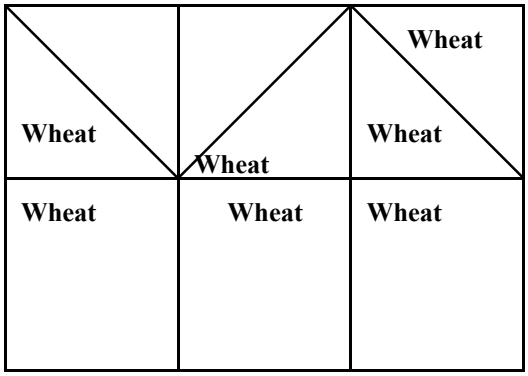
**FARM A**



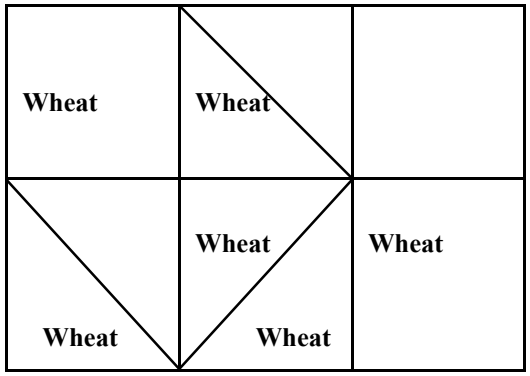

**FARM B**




**FARM C**




**FARM D**




1. Which farm has the largest area planted in wheat? *Farm C*
   How many acres of wheat are planted on this farm? *180 acres*

2. Which farm has the smallest area planted in wheat? *Farm B*
   How many acres of wheat are planted on this farm? *140 acres*

3. Which two farms have the same area planted in wheat? *Farms D and A*
   How many acres of wheat are planted on each of these farms? *160 acres on each*

4. About 70 loaves of bread can be produced from one bushel of wheat. If the average yield of wheat from each of the farms is 58 bushels per acre, about how many loaves of bread can be produced from the wheat produced on each farm?
   Farm A: *649,600 loaves of bread*
   Farm B: *568,400 loaves of bread*
   Farm C: *730,800 loaves of bread*
   Farm D: *649,600 loaves of bread*

**Student Handout** **Name**_____

# PARTY GRAIN MIX

**Directions:** Read the *Party Grain Mix* recipe. Notice that the recipe is written to serve 12 people using improper fractions. Rewrite the recipe using mixed numbers to serve 24 people.

**PARTY GRAIN MIX**

9/2 tsp. Worcestershire Sauce
13/4 cups Rice Chex Cereal
13/4 cups Corn Chex Cereal
5/2 cups Wheat Chex Cereal
5/4 tsp. salt
5/4 cups salted peanuts
5/4 cups stick pretzels
17/2 Tablespoons margarine

Melt the margarine and stir in the salt and Worcestershire sauce. Mix the remaining ingredients in a large bowl. Pour the margarine mixture over the cereal mixture and stir until well coated. Pour the mixture in the baking dish and place in a 350-degree oven for 20 - 25 minutes. Servings: 12

**PARTY GRAIN MIX**

_____tsp. Worcestershire Sauce
_____ cups Rice Chex Cereal
_____ cups Corn Chex Cereal
_____ cups Wheat Chex Cereal
_____ tsp. salt
_____ cups salted peanuts
_____ cups stick pretzels
_____ Tablespoons margarine

Melt the margarine and stir in the salt and Worcestershire sauce. Mix the remaining ingredients in a large bowl. Pour the margarine mixture over the cereal mixture and stir until well coated. Pour the mixture in the baking dish and place in a 350-degree oven for 20 - 25 minutes. Servings: 24

**PARTY GRAIN MIX**

9 tsp. Worcestershire Sauce
6 ½ cups Rice Chex Cereal
6 ½ cups Corn Chex Cereal
5 cups Wheat Chex Cereal
2 ½ tsp. salt
2 ½ cups salted peanuts
2 ½ cups stick pretzels
17 Tablespoons margarine

Melt the margarine and stir in the salt and Worcestershire sauce. Mix the remaining ingredients in a large bowl. Pour the margarine mixture over the cereal mixture and stir until well coated. Pour the mixture in the baking dish and place in a 350-degree oven for 20 - 25 minutes. Servings: 24

**Parent Survey**

Our class has studied the "Bread, Cereal, Rice & Pasta Group" of the *Food Guide Pyramid* and the importance of eating a healthy breakfast each day. We would appreciate you helping us determine the success of our study by completing this survey. Please complete the survey and return it to school with your child.

Please write *yes*, *no,* or *maybe* in the blank before each statement.

At the end of the *Building on Grains* unit of study, I have noticed the following changes:

_____ 1. My child has been interested in going to school.

_____2. I have seen some changes in the breakfast eating habits of my child.

_____3. My child has more interest in being healthy.

_____4. My child has demonstrated more personal responsibility towards health.

_____5. My child has included servings from the "Bread, Cereal, Rice & Pasta Group" in breakfast each day.

_____6. My child has paid more attention to what we eat for breakfast.

_____7. My child has mentioned the *Food Guide Pyramid* at home.

_____8. My child has prepared or has expressed an interest in preparing breakfast foods.

_____9. My child has shared information with me that has been part of the study.

_____10. I would recommend *Building on Grains* for other sixth grade classes.

**Comments:**